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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/688,867 | 10/17/2003 | Francesco Stellacci | P-8698-US | 9441 |

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Pearl Cohen Zedek Latzer, LLP
1500 Broadway
12th Floor
New York, NY 10036

| EXAMINER | |
|---|---|
| YANG, NELSON C | |

| ART UNIT | PAPER NUMBER |
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| 1641 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/688,867 | STELLACCI ET AL. | |
| | Examiner | Art Unit | |
| | Nelson Yang | 1641 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) *111,112,145,146,177-180,182,183,215 and 216* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,40,49,50,52,57,97,106,107,109,246 and 247* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/17/03* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1,40,49,50,52,57,97,106,107,109,111,112,145,146,177-180,182,183,215,216,246 and 247.

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment of claims 1, 49, 57, 97, is acknowledged and has been entered.

2. Applicant's addition of claims 246-247 is acknowledged and has been entered.

3. Applicant's cancellation of claims 2, 58, is acknowledged and has been entered.

4. Claims 1, 40, 49, 50, 52, 57, 97, 106, 107, 109, and 246-247 are currently pending and under examination.

5. Claims 111-112, 145-146, 177-180, 182-183, 215-216 are withdrawn.

### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 49, 50, 52, 57, 106, 107, 109, 246-247 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guire et al. [US 6,514,768] in view of Liang et al. [US 2003/0148304].

With respect to claim 1, Guire et al. teach providing a master array having a support surface, immobilizing a plurality of oligonucleotides on the master array support surface to form a pattern of oligonucleotides, hybridizing multi-ligand conjugates with the oligonucleotides on the master array support surface, providing an assay array support surface, and disassociating the first binding domains from the master array support that permits the conjugates to remain upon the assay support surface (column 17, line 40 – column 18, line 25). Guire et al. do not clearly

establish that the multi-ligand conjugates forms a bond with the surface of the second substrate, instead teaching an intermediary molecule or coating that binds the conjugates to the surface of the second substrate.

Liang et al., however, teach that silane-nucleic acid conjugates can be constructed and reacted with a glass surface at similar efficiencies as normal silane, and that this allows for conjugation and glass immobilization reactions to be accomplished in the shortest time, while incurring minimal background signals (para. 0015).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have had used functional groups such as thiols as the ligand for immobilizing the multi-ligand conjugates of Guire et al. on the surfaces of assay array supports, which are comprised of glass or silicon, as Liang et al. teach that this would allow for conjugation and glass immobilization reactions of the multi-ligands of Guire et al. to be accomplished in the shortest time.

It is noted that the optional steps recited have not been considered, as they are not recited as being optional for the method and therefore the claims would encompass a method which did not include the steps

8. With respect to claim 49, Guire et al. teach an embodiment where portions of the second substrate are free of the multi-ligand components (see fig. 1A).

9. With respect to claims 50, 52, Guire et al. teach that the assay arrays may then be used as master arrays to form corresponding assays arrays by the same process (column 18, lines 55-63). Guire et al. teach passivating the surface of the assay array prior to and/or after exposure to the binding partner, such as with a surfactant (column 17, lines 1-5) or using wet chemical etching

procedures to etch the substrate (column 21, lines 70-11). Guire et al. further teach washing excess conjugates from the surface of the substrate (column 21, liens 30-35), which would uncover portions of the substrate that are not part of the pattern.

10. With respect to claim 57, Guire et al. teach providing a master array having a support surface, immobilizing a plurality of oligonucleotides on the master array support surface to form a pattern of oligonucleotides, hybridizing multi-ligand conjugates with the oligonucleotides on the master array support surface, providing an assay array support surface, and disassociating the first binding domains from the master array support that permits the conjugates to remain upon the assay support surface (column 17, line 40 – column 18, line 25). Guire et al. further teach that the multi-ligand conjugates contain a plurality of active domains (exposed functionality) (column 13, lines 22-28). Guire et al. teach that the assay arrays may then be used as master arrays to form corresponding assays arrays by the same process (column 18, lines 55-63).

Guire et al. do not clearly establish that the multi-ligand conjugates forms a bond with the surface of the second substrate, instead teaching an intermediary molecule or coating that binds the conjugates to the surface of the second substrate.

Liang et al., however, teach that silane-nucleic acid conjugates can be constructed and reacted with a glass surface at similar efficiencies as normal silane, and that this allows for conjugation and glass immobilization reactions to be accomplished in the shortest time, while incurring minimal background signals (para. 0015)..

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have had used functional groups such as thiols as the ligand for immobilizing the multi-ligand conjugates of Guire et al. on the surfaces of assay array supports, which are

comprised of glass or silicon, as Liang et al. teach that this would allow for conjugation and glass immobilization reactions of the multi-ligands of Guire et al. to be accomplished in the shortest time.

It is noted that the optional steps recited have not been considered, as they are not recited as being optional for the method and therefore the claims would encompass a method which did not include the steps

11. With respect to claim 106, Guire et al. teach an embodiment where portions of the second substrate are free of the multi-ligand components (see fig. 1A). Therefore, since the pattern on the third substrate is formed by the same process as the second, portions of the third substrate would also be free of molecules.

12. With respect to claims 107, 109, Guire et al. teach that the assay arrays may then be used as master arrays to form corresponding assays arrays by the same process (column 18, lines 55-63). Guire et al. teach passivating the surface of the assay array prior to and/or after exposure to the binding partner, such as with a surfactant (column 17, lines 1-5) or using wet chemical etching procedures to etch the substrate (column 21, lines 70-11). Guire et al. further teach washing excess conjugates from the surface of the substrate (column 21, liens 30-35), which would uncover portions of the substrate that are not part of the pattern.

13. With respect to claims 246-247, Guire et al. teach providing a master array having a support surface, immobilizing a plurality of oligonucleotides on the master array support surface to form a pattern of oligonucleotides, hybridizing multi-ligand conjugates with the oligonucleotides on the master array support surface, providing an assay array support surface, and disassociating the first binding domains from the master array support that permits the

conjugates to remain upon the assay support surface (column 17, line 40 – column 18, line 25). Guire et al. further teach that the multi-ligand conjugates contain a plurality of active domains (exposed functionality) (column 13, lines 22-28). Guire et al. teach that the assay arrays may then be used as master arrays to form corresponding assays arrays by the same process (column 18, lines 55-63).

Guire et al. do not clearly establish that the multi-ligand conjugates forms a bond with the surface of the second substrate, instead teaching an intermediary molecule or coating that binds the conjugates to the surface of the second substrate.

Liang et al., however, teach that silane-nucleic acid conjugates can be constructed and reacted with a glass surface at similar efficiencies as normal silane, and that this allows for conjugation and glass immobilization reactions to be accomplished in the shortest time, while incurring minimal background signals (para. 0015)..

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have had used functional groups such as thiols as the ligand for immobilizing the multi-ligand conjugates of Guire et al. on the surfaces of assay array supports, which are comprised of glass or silicon, as Liang et al. teach that this would allow for conjugation and glass immobilization reactions of the multi-ligands of Guire et al. to be accomplished in the shortest time.

It is noted that the optional steps recited have not been considered, as they are not recited as being optional for the method and therefore the claims would encompass a method which did not include the steps

14. Claims 40 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guire et al. [US 6,514,768] in view of Liang et al. [US 2003/0148304], as applied to claim 1 above, and further in view of Aksay et al. [US 2001/0023024].

With respect to claims 40, 97, Guire et al. teach providing a master array having a support surface that may be metal (column 7, lines 53-58) to form a pattern (column 3, lines 60-65), immobilizing a plurality of oligonucleotides on the master array support surface, hybridizing multi-ligand conjugates with the oligonucleotides on the master array support surface, providing an assay array support surface, and disassociating the first binding domains from the master array support that permits the conjugates to remain upon the assay support surface (column 17, line 40 – column 18, line 25). Guire et al. fail to teach that the patterning is performed using electron beam lithography on a metal surface.

Aksay et al. teach using electron beam lithography to form patterns on arrays (para. 0080) and further teach that this allow for thinner structures to be formed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used electron beam lithography to form the patterns in the master array of Guire et al., as suggested by Aksay et al., in order to form small patterns, thus decreasing the size of the array formed.

***Response to Arguments***

15. Applicant's arguments with respect to claims 1, 40, 49, 50, 52, 57, 97, 106, 107, 109, and 246-247 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

16. No claims are allowed.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571)272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on (571)272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nelson Yang/
Primary Examiner, Art Unit 1641